

**REQUEST FOR QUOTE (RFQ)**  
**FOR FABRICATION, ASSEMBLY AND SUPPLY OF**  
**COMPOSITE GRIDDED DUAL LAUNCH ADAPTOR**  
**VERSION-3/VERSION-4 (DLA-V3/DLA-V4)**  
**FOR PSLV**

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**DEPARTMENT OF SPACE**  
**GOVERNMENT OF INDIA**

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# 1. Introduction

This document presents the technical requirements for processing and assembly of Dual Launch Adaptor Version-3 / Version-4 (DLA-V3 / DLA-V4) of certain characteristics features and hence some product specific requirements envisaged in the contract. This document outlines the essential components and assembly quality assurance plan.

The Dual Launch Adaptor Version-3/Version-4 (DLA-V3/ DLA-V4) envisaged under the contract are meant for use in PSLV Launch vehicle. 04 sets of hardware are required over a period of 2 years with a delivery schedule of 2 nos per year.

The process described in this document, is well qualified and is being already followed in house and same to be followed by the prospective contractor.

## 2. Scope of work

Realization of Dual Launch Adaptor Version-3/Version-4 (DLA-V3/DLA-V4) as per Technical Annexure I & II.

## 3. Facility Requirements

- i. Processing of CFRP elements requires AC clean room with temperature and humidity control of minimum size of **10m length X 10m width X 3m** height with trolley/crane / fork lift facility for moving the metallic mould and vacuum line (0.8bar).
- ii. Cold storage for storing of **650 m<sup>2</sup>** prepreg for one hardware, should have controlled temperature and recording facility and minimum temperature requirement to store Carbon prepreg is -20°C.
- iii. Prepreg cutting machine.
- iv. Autoclave: Vendor should have fully automatic/semi-automatic autoclave of size having minimum **4m** diameter and **4.0m** length with digital/analog recording/printing facilities for curing cycle.
- v. NDT Facilities:- Vendor should have ultra-sonic, A-scan, C-scan & shearography facilities. All the composite elements should be subjected to 100% NDT.
- vi. Testing facilities:- UTM machine with **100 kN** capacity with automatic recording facilities for testing of control coupons.
- vii. Video recording facility for processing and layup activities and recorded data in digital form to be provided to VSSC along with product.
- viii. Inspection facilities:-Vendor should have 3D coordinate measuring machine/laser tracker of **minimum 5m length X 5m width X 1.5m height**.
- ix. Storage facility having capacity of **3 m dia** to accommodate **Dia 2.8 m** end rings (5 nos per hardware).
- x. Assembly facilities:-Assembly bay of minimum size **20m length X 10m width X 12m height below hook of overhead crane with minimum EOT of 10Tonnes**. Assembly bay should have vacuum and pressure lines.

**Note: if the facility is not available with the vendor (other than those given in eligibility criteria, refer section 14.0), detailed plan for establishing the required facility to be given.**

#### **4. Delivery Schedule**

<b>S.No.</b>	<b>Component/Products</b>	<b>Quantity/Year</b>
1.	First Hardware	Within six months from the issue of FIM & release of stage clearance for processing
2.	Second Hardware onwards	Six month after release of stage clearance for processing (two hardware per year)

#### **5. Brief Specification of The Product**

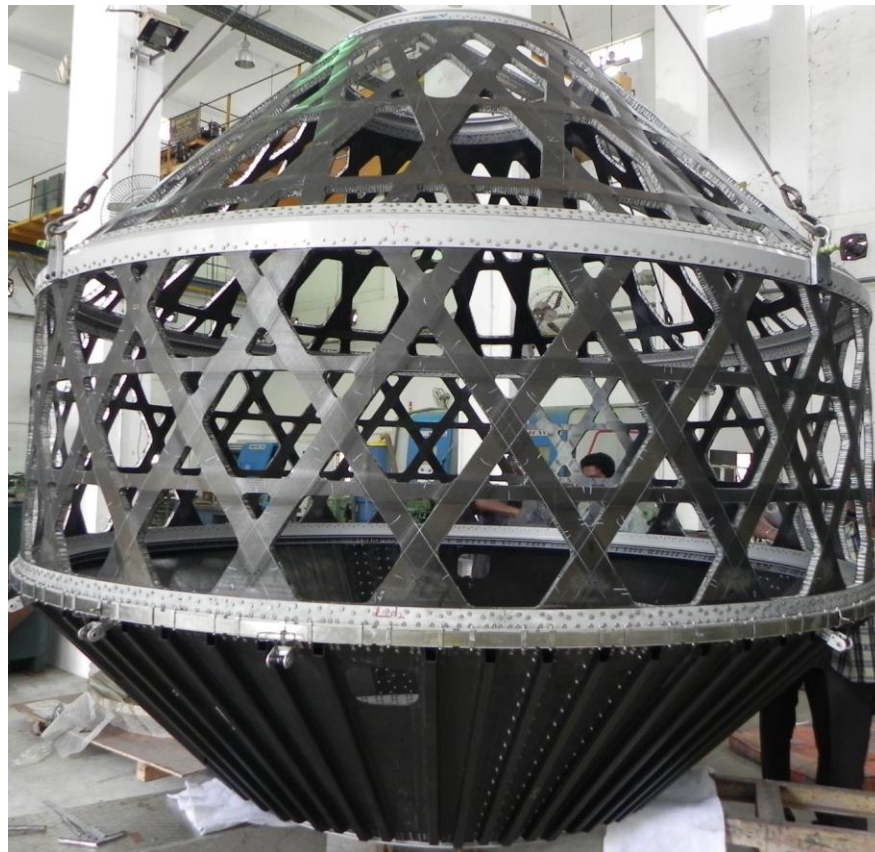
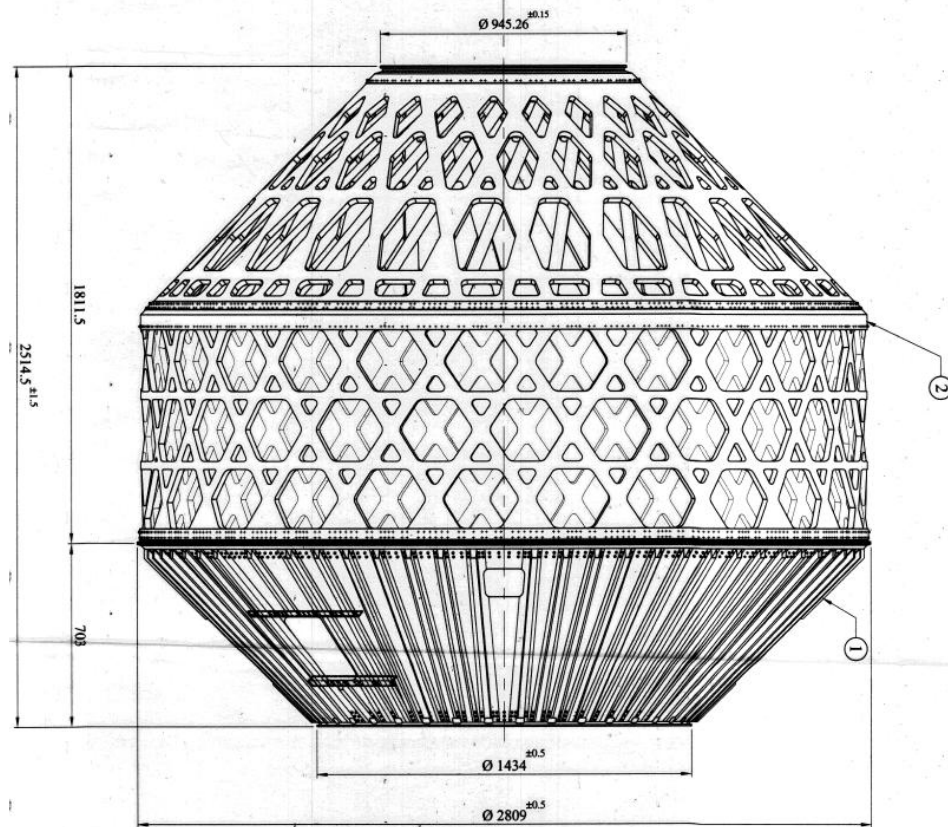
The DLA-V3/DLA-V4 is made out of HTS/M18 carbon/epoxy UD prepreg. The Dual Launch Adaptor Version-3/Version-4 consists of two parts, namely DLA-Upper and DLA-Lower and its total height is 2770 & 2514mm for DLA-V3 & DLA-V4 respectively. The DLA Upper is composed of truncated conical shell and cylindrical shell combined together. An Aluminium transition ring connects the truncated conical shell and the cylindrical shell of DLA-U. The DLA Lower is of inverted truncated conical shell. The DLA-U will be made of gridded construction in which the conical shell and the cylindrical shell are formed with helical and circumferential sandwich members and both are connected by transition ring.

The DLA-L is stringer-stiffened shell having the hat cross-section for the stringers (90 deg sectors – 4 nos and joined by inside and outside splicers). The end rings of DLA-V3/DLA-V4 will be made out of Aluminium alloy. Al Bulkheads are provided above and below the cut outs (200 x 250 x 350 mm – 04 Nos.) of DLA-L.

The CFRP shell is bonded and fastened to the end rings. Titanium COMPOSILOK and MAF fasteners are used for fastening of shell to end rings. The overall dimension of DLA-V4 is shown in **Fig. 1**. The list of components is shown in **Table 1**.

The detailed process and assembly are given in Technical annexure I.

The detailed drawings are given in Technical annexure-II.



**Fig 1. Dual Launch Adaptor (DLA-V4) Assembly**

Table1: List of components for DLA-V3/DLA-V4

Sl. No.	Title of drawing	Drawing numbers	Quantity
1	DLA-V3 Upper assembly DLA-V4 Upper assembly	H301-81200 H301-82200	1
1.1	AE ring	H301-81201	1
1.2	Transition ring	H301-81202	1
1.3	FE ring	H301-81203	1
1.4	Gridded Cylinder (DLA-V3) Gridded Cylinder (DLA-V4)	H301-81204 H301-82204	1
1.5	Gridded Cone	H301-81205	1
1.6	AE ring Splicer	H301-81206	6
1.7	Transition ring splicer (cylinder)	H301-81207	6
1.8	Transition ring splicer (cone)	H301-81208	6
1.9	FE ring splicer	H301-81209	7
1.10	Composilok Fastener (MBF-2110S-6-200)	-	1146
1.11	MAF Fastener (MAF-PP-V06-19)	-	1335
1.12	Handling Bush	H301-81210	8
2	DLA-V3/DLA-V4 Lower assembly	H301-81100	1
2.1	AE ring	H301-81101	1
2.2	FE ring	H301-81102	1
2.3	CFRP P Panel (P+ / P-)	H301-81103	2
2.4	CFRP Y Panel (Y+ / Y-)	H301-81104	2
2.5	Outer splicer Type - 1	H301-81105	2
2.6	Outer splicer Type - 2	H301-81106	2
2.7	Inner splicer Type - 1	H301-81107	2
2.8	Inner splicer Type - 2	H301-81108	2
2.9	Bottom Bulkhead	H301-81109	4
2.10	Top Bulkhead	H301-81110	4

2.11	Composilok Fastener (MBF-2110S-6-250,300,350)	-	1236
2.12	Handling Bracket Type - I	-	2
2.13	Handling Bracket Type - II	-	2
2.14	HSHB M5 x 0.8 x 20L	-	32
2.15	Hex. Nut M5 x 0.8	-	32
2.16	Plain washer M5	-	64
2.17	HSHS M4 x 0.7 x 12L	-	352
2.18	Hex. Nut M4 x 0.7	-	352
2.19	Plain Washer M4	-	704

## 6. Scope of supply

- i. Preparation of process and assembly documents, Travelling log and quality control plan based on the baseline documents supplied by VSSC and its presentation by the vendor's representative in process review committee of CMSE/VSSC for approval.
- ii. Vendor shall identify and use an exclusive space for storage of raw materials related to VSSC as per the recommendation of the raw material supplier. Record of the storage related information to be available and maintained.
- iii. Periodic Calibration to be done for all Equipments used, ie, from the stage of storing the raw material to realizing, testing and final transportation.
- iv. The party should procure process consumables from VSSC qualified vendors only
- v. **FIM: following item will be supplied by VSSC as free issue materials (FIM) against the bank guarantee.**
  - a. Aluminium alloy 2014/T651/2 end rings (05 nos.), Al bulkheads (08 nos.) for DLA-Lower & Al splicers for DLA-Upper (25 nos.) and approximate cost of raw material is **Rs. 15 lakhs**
  - b. All fasteners required for assembly (Composilok, MAF & conventional titanium fasteners) approximate cost of fasteners is **Rs. 16.0 lakhs**
  - c. Mould for processing of panels, splicers for DLA-Lower, moulds for processing of Gridded cone and Gridded cylinder for DLA-Upper. The approximate cost of tooling is **Rs. 20.0 lakhs**
  - d. Assembly fixture for assembly of panels to end ring for DLA-Lower (01 no) and DLA-Upper (02 nos). The approximate cost of assembly fixture is **Rs. 20.0 lakhs**.
  - e. Raw materials for making CFRP shell will be supplied as FIM and details are given below.
    - HTS/M18 prepreg: - 650m<sup>2</sup> and the approximate cost is **Rs. 30.0 lakhs**.

- Al honey comb core (CRIII-1/4-5056-.001P, of 2.3 pcf of 20mm thick: - 9 sheets of 1.2m x 2.4m and the approximate cost is **Rs. 9.0 lakhs**.
- Redux 319L (180 gsm) : **40 m<sup>2</sup>** and the approximate cost is **Rs.4.0 lakhs**
- Redux 219/2NA foam adhesive : **3 m<sup>2</sup>** and the approximate cost is **Rs.0.60 lakhs**
- EPG 2601 Part A & B (5 kg ), Microbaloon (1 kg) and the approximate cost is **Rs.0.40 lakhs**

- vi. Processing of all the CFRP components (mentioned in table-1) for DLA-V3/DLA-V4 as per approved process documents and part drawings (given in technical annexure – II).
- vii. Processing of all CFRP components only after getting necessary stage clearances from VSSC.
- viii. Trimming to the size and providing cut outs on the processed panels as per drawings.
- ix. 100% Dimensional inspection (using conventional and CMM where ever required) and NDT (VT, UT and IR thermography) of the processed components at various stages of processing as per the approved dimensional inspection and NDT plan by VSSC.
- x. On-line quality control from raw material stage to final delivery of DLA-V3/DLA-V4 with complete traceability. Quality control (QC) shall be carried out by identified QC personnel and they shall not be part of the production team.
- xi. Supply of stage clearance papers including all the reports (i.e. test reports, traveling logs, inspection and NDT reports etc.), as per stage clearance formats given by VSSC.
- xii. Preparation and testing of Control coupons as per the approved process plan – 20 nos of specimens are to be tested, out of which 10 nos are to be tested at by the vendor and the remaining 10 nos. at VSSC.
- xiii. Delivery of hardware along with 4 sets of product log and Travelling Log in the prescribed formats after pre-dispatch clearance by VSSC representatives.
- xiv. Final packing and Transportation of the products to the destinations identified by the Department.
- xv. Technicians and Technical supervisory staff concerned with the DLA-V3/DLA-V4 should have adequate exposure and experience in Composite Processing.
- xvi. The vendor shall maintain a separate team of technicians preferably with ITI (fitter/machinist) qualification with composite experience and supervisors of minimum Engg. Diploma (mechanical/chemical) for processing, machining, bonding operations and assembly activity.
- xvii. No composite processing and assembly work to be Sub-contracted. Sub-contracting of any other work shall be with the prior approval of VSSC only.
- xviii. Identification No. of the components shall be marked on the components immediately after extraction /machining and to be retained till the final assembly.

## **7. General Quality Requirements**

- i. Only accepted raw materials shall be used. Shelf life items shall be stored under controlled environment as per the supplier's recommendations. Batch No. and shelf life shall be marked on every batch with the date of manufacture/date of receipt etc.
- ii. Process plans encompassing the tooling qualification, process, process flow, control parameters, stage clearance points, etc. shall be prepared by the industry and provided to VSSC for review and approval before implementation based on the base line document supplied by VSSC.
- iii. A comprehensive Travelling log shall be maintained for all the operations (raw material reports, process log, online-inspection, dimensional inspection, NDT, acceptance testing, etc) from component level to assembly level including the stage clearance points. Non-conformances and dispositions shall also form part of the travelling log. Logs to be provided to VSSC at the indentified stages. Concerned personnel have to log the operations done and sign with date for easy traceability.
- iv. All the deviations/non-conformance from the specifications observed during the manufacturing and test phases shall be recorded in real time and informed to VSSC. Non-conformances have to be entered in separate non-conformance format indicating the specifications/deviations, reasons for non-conformance, suitable corrective or preventive actions to avoid them in future.
- v. Any non-conformance minor/major with reference to the approved plan/specification shall be referred to VSSC on real-time basis for review, discussion and clearance by non-conformance review boards.
- vi. It is mandatory for the vendor to get the clearances from VSSC on any non-conformances before proceeding with the work.
- vii. As and when required, additional specimen shall be supplied by the industry for verification by VSSC.
- viii. The vendor shall generate detailed plans for control coupon / raw materials testing, dimensional inspection and NDT conducted at their facilities which shall contain method and procedure for conducting each test, measurement plan and accuracy of the equipments. All the test results shall be available as part of the travelling log.
- ix. 100% inspection (dimensional inspection and NDT (with reference specimens, which will be supplied by VSSC as FIM) shall be done on all components and assembly. Reporting should be done in the required formats.
- x. All the documents/procedures generated by the vendor shall be provided to VSSC for review and acceptance prior to implementation.

## **8. Manufacturing Quality control**

The industry shall generate detailed process plan and provide the same to VSSC for review and acceptance before implementation. The process plans shall include the details of raw materials and their storage and test scheme, intermediate processing steps such as prepreg cutting, hand lay-up, vacuum bagging, curing, extraction, machining, assembly,

equipments/machinery, toolings, jigs, fixtures, etc. based on the baseline document provided by the department. The plan shall also include the handling and transportation plan. Comprehensive logging of all process parameters shall be done during processing which will form part of the travelling log.

## **8.1 Major in-process QC parameters include**

- i. Verification of acceptance of raw materials.
- ii. Verification and acceptance of toolings.
- iii. Inspection of no. of layers, lay up orientation, lay-up sequence, etc. during moulding/layup. Evidence in the form of photograph, video-recording, template acceptance for control coupon/location, end-tag specimen has to be provided to VSSC on real time basis.
- iv. Control of curing temperature, curing time, heating and cooling rates, vacuum and pressure, etc. during curing.
- v. Cutting of control coupons.
- vi. Verification of metallic machined components.
- vii. Verification of panel trimming line marking and cutout location marking.

## **8.2 Stage Clearance**

In the manufacturing cycle of a component, there are stages where mandatory clearance shall be obtained from VSSC for proceeding with the work and are identified as stage clearance points in the process documents.

## **8.3 Tests on control coupons**

Control coupons have to be cut from the CFRP components to the required size and numbers. The tests have to be conducted by the vendor. Also control coupon specimens as and when required need to be made available if the coupons provided by the industry are damaged/ delaminated/ quality of control coupon is not satisfactory. This will be used as a standard for evaluation of product quality. The balance laminates after cutting the control coupons shall be tagged and stored properly for any requirement in the future. These shall be stored until final acceptance of the product.

## **8.4 Quality Audit**

The vendor facility shall be allowed to be audited by VSSC. Vendor facility shall be open to VSSC surveillance /inspection as and when required related to realization of DLA-V3/DLA-V4. This includes sub-contractor work areas also if any.

## **8.5 Product acceptance Tests**

Process log, dimensional inspection, NDT, and control coupon tests are the normal product level acceptance screening. The industry has to prepare detailed test plan containing the set

up, instrumentation, etc. in accordance with the requirement which will be reviewed and approved by VSSC before implementation. Any such tests shall be done in the presence of VSSC representatives.

## **8.6 Dimensional inspection**

100% dimensional inspection has to be carried out on all components, subassemblies and assembly as per the approved fabrication drawings. The industry shall generate dimensional inspection plan, to be reviewed and accepted by VSSC before implementation.

## **8.7 Non-Destructive testing**

100% NDT shall be carried out using visual inspection, ultrasonic dry couplant / couplant, C-scan, IR thermography, & sheargraphy for the detection of defects such as delaminations, cracks, wrinkles, debonds, foreign particle inclusion etc. as per approved NDT plan from VSSC.

The vendor shall generate the NDT plan, reviewed and approved by VSSC before implementation.

## **8.8 Access to facility**

VSSC should be allowed to access/visit the vendor's facilities at any time.

## **8.9 Non-conformance management**

Any non-conformance with reference to the approved plan shall be referred to VSSC in real-time. It is mandatory for the industry to get clearances on any non-conformance before further proceeding with the work. Acceptance of the non-conformance will be decided based on technical assessment of non-conformance, impact analysis & non-conformance reviews.

## **8.10 Product Acceptance plan**

Acceptance / rejection of components at various stages shall be decided by VSSC based on dimensional inspection, NDT, process log & control coupon tests on specimen. The criteria for acceptance are that the component shall meet Processing of the part as per approved process document, dimensional requirements as per drawing, specified requirements in specimen tests. Quality of the product as interpreted with NDT. In the event of a component not meeting the above requirements, it shall be referred to VSSC for review and a decision will be taken for acceptance/rework/rejection depending on the criticality of the non-conformance.

## **Change Control Plan**

Any minor change from the VSSC / Department approved plans and drawings shall be made only with the knowledge of the department. For this purpose, a request for change shall be given to the department which will be reviewed and the decision will be communicated.

## **8.11 Rework plan**

Normally no rework is allowed for all the components/assembly/sub-assemblies. However, based on the nature of the non-conformance, the possibility of rework shall be communicated to the industry after thorough analysis/review of the deviation at VSSC on a case to case basis.

## **8.12 Review required at different stages**

Review of raw material test results before processing. Review of storage plan for raw materials. Review of process plan including acceptance of tooling and fixtures, handling and transportation plan, acceptance test plans, dimensional inspection plans, NDT plans etc. Review of product acceptance test results. Pre-despatch review – A pre-despatch review will be conducted after readiness of each product to assess its acceptance in which the key personnel including HOD's of the Contractor shall participate and provide necessary inputs. Monthly status review - in which the key personnel including HOD's of the Contractor shall participate and provide necessary inputs. Biannual/annual quality review -in which the key personnel including HOD's of the Contractor shall participate and provide necessary inputs on the quality issues, root cause analysis, implementation of corrective and preventive actions, improvements carried out, etc.

## **9. Documentation requirements before starting of the activities.**

Following documents are required from the vendor.

- i. Process plan, Assembly plan and Quality Control plan
- ii. Raw material storage and test plan
- iii. Control coupon test plan
- iv. Dimensional inspection plan
- v. NDT plan
- vi. Traveling log formats
- vii. Traveling log containing full history of each product starting from raw material to acceptance tests.

All documents affecting Product quality shall be controlled. All engineering documents concerning the product and associated documents, especially specifications, drawings, manufacturing and test procedures as well as test reports, will be subject to review and approval by VSSC before implementation.

The compliance of above plans shall be enforced by the records (Test reports, curing charts, traveling logs and product logs), which will be generated on real time basis. Further, proper identification of all raw materials and fabricated components shall be made to ensure their traceability.

The final product shall be accepted subject to the products processed as per the approved process documents and drawing and their passing through the above mentioned quality checks.

### **Pre-dispatch Review**

A pre-dispatch clearance review will be conducted by VSSC on submission of all the documents. After clearing the product by VSSC only the product need to be dispatched by the contractor.

## **10. Travelling Log – Traceability**

Documentation of work will be continuously filled as manufacturing proceeds on real time basis. Each product will finally have its own complete and accurate documentation file. This will provide traceability for all raw materials, manufacturing, inspection and testing steps and for the conditions under which they took place. All quality records will be available and open for review by VSSC. Log sheets will be established starting with the receiving inspection. Records to be provided for each article manufactured and to be communicated to VSSC on real time/identified stages.

## **11. Product Log**

Product Log will be prepared for each set of hardware and assembly. They shall include the identification list with clear reference to documents such as change of drawings issue, non-conformances affecting the configuration, Waiver/Deviation Number. Any changes/deviations to the specification/required configuration shall be systematically identified in one list with main description of the change. Four copies of each product log is to be delivered to the customer. General content of product log is as follows.

- Non Conformance Reports (List and Major NCR)
- Definition Drawings.
- All Inspection/Test Reports from raw material level to final product Delivery List.
- Handling/Packing/Transportation/Unpacking Details.
- Records of Pre Delivery Review.
- Status of non-conformances.
- Certificate of compliance (COC).

Product log to be supplied with charts, photos, videos wherever applicable.

## **12. Guidelines For Handling, Storage, Packing And Transportation**

### **i. Inter Process handling**

After moulding, extraction and cleaning, all CFRP components should be covered using polyester film and kept on moulded PE/PU foam supports which ensures uniform surface support. The CFRP Components should be handled carefully for moving from one place to another internally, viz. inspection, NDT, Testing etc. Care shall be taken to avoid damages or contamination (oil, grease etc.) while handling the products at every stage. Fabrication of support structure with foam lining is the scope of the vendor.

## ii. Storage

Clean all the CFRP components thoroughly using laboratory alcohol with banian cloth. Cover all CFRP components with thick polyester film and bubble sheet. The polyester film should be cleaned with TCE (LR grade) before covering it to the CFRP components. Use cello tape to the full length of the joint between polyester film. Make an air tight polythene bag and place the CFRP components inside the bag. Evacuate the polythene bag and seal it. The CFRP components shall be supported on shaped structure with moulded foam lining for storage. The assembled hardware should be kept in proper storage with fully soft material supported at aft end.

## iii. Dispatch

Finished hardware should be dispatched in a closed container supplied by VSSC along with documentation.

## **13. Technical Annexures**

1. Technical annexure-I :- The detailed process and assembly plans.
2. Technical annexure-II :- Applicable drawings.

## **14. Eligibility for participating in the Bid**

Considering the criticality of the process and product, vendors who meet the following conditions are only eligible to participate in the bid. Vendors who do not meet these criteria will be rejected.

1. Experience in processing and assembly of CFRP components or have engineers & technicians with minimum 3 year experience in composite processing for aerospace applications by autoclave moulding.
2. -20<sup>0</sup>C clod storage for storing minimum 650 m<sup>2</sup> prepreg at -20<sup>0</sup>C.
3. Clean room (one lakh class) of minimum 10m x 10m x 3m size for processing.
4. Prepreg cutting machine
5. Ultrasonic test facilities.
6. Assembly bay with pressure line

Note: All other facilities mentioned in section 3.0 required for this program shall be established by vendor within six month from date of placement of purchase order.

The vendor shall specifically give the comprehensive to the above eligibility conditions. Proof for experience shall be provided in the form of purchase order executed previously.

## **15. General Instruction for Submission of Bids**

- i. Bids have to be submitted in two parts namely,
  - I. Technical and Commercial and
  - II. Price bids detailed in the Annexure

- ii. The technical bid should indicate whether all equipments are available with the supplier and if not, the date of commissioning of such equipments and the date of readiness of the facility to take up the work. The vendor shall get approval from the department on the suitability of the equipment before procurement.
- iii. Offers shall contain proposals in response to this tender in English, unless otherwise permitted by the department, and cost in Indian Rupees.
- iv. The Department may reject any or all proposals if such action is in the Department's interest.
- v. The Department intends to evaluate proposals and award a contract without discussions with Offerors. Therefore, the Offeror's initial proposal should contain the Offeror's best terms from a technical, commercial or price standpoint. The Department reserves the right to conduct discussions if the department later determines them to be necessary.
- vi. The Department reserves the right to make an award for a quantity less than the quantity offered, at the unit cost or prices offered, unless the Offeror specifies otherwise in the proposal.
- vii. The Department reserves the right to make multiple awards if, after considering the additional administrative costs, if it is in the Department's best interest to do so.

## **16. Instructions For Submission Of Commercial Bid**

- i. The following details should be furnished in the commercial bid
  - a) Process consumables cost shall be payable at actual against submission of documents. However the quantities and present prices offered by the bidder should be indicated for each material/process consumable for the purpose of overall pricing.
  - b) Details about the company like nature of ownership, products, sales turnover, number of employees in different categories, details of top management, strengths in composite field, list of key personnel and their expertise, etc.
  - c) Plant Details:
    - Location
      - Plant Layout for the manufacture and assembly of Composite gridded Dual Launch Adaptor Version-3/Version-4 (DLA-V3/DLA-V4) mentioned in this RFQ, bringing out clearly the areas and type of construction of buildings, and the operations/activities planned in each building.
  - d) Details of availability of power. Availability of alternate sources of power to run machines/facility in case of emergency.
  - e) Machinery and equipment and facilities: Specification and "make" of machinery. Details of equipment and facilities already available and those planned to be procured/added are to be separately given.
  - f) Description of the manufacturing process and the product flow including procurement of process consumables and storage of raw materials, acceptance testing, operations -

both simultaneous and serial — planned quality control and inspection processes, handling of raw materials, in-process components and finished products.

- g) Copy of Annual turn-over statement/balance sheet.
- ii. GST Registration Number, Basis of price like, Ex-works, Door Delivery, for Destination etc.
- iii. Applicability, Packing and Forwarding and freight Charges.
- iv. Delivery schedule.
- v. Payment Terms: Our normal payment terms of “100% within 30 days of receipt and acceptance of the item at our site”.

## **17. Format For Submission Of Technical Proposal**

- i. The proposal shall be submitted in soft form (pdf format).
- ii. The soft copy of the proposal shall be submitted with each section appropriately tabbed and identified, and organized. Each section shall stand alone and provide complete coverage of the topic, including responses to each item described in the proposal instructions. Each section shall include a table of contents (excluded from page limitations) applicable to the section for ready reference to key parts, figures, and illustrations.
- iii. A cover sheet should be contained as the first page of each book, clearly marked as to section number, title, tender identification and the Offeror's name.

## **18. Preparation Of Technical Proposal**

- i. The Technical Proposal shall set forth, in detail, the Offeror's method for accomplishing the work specified in this Request for quote(RFQ); the resources that will be devoted to the effort; knowledge of the elements comprising the effort; and measures that will be taken to ensure effective, efficient, timely, and quality performance. The Offeror shall address the factors being evaluated as set forth in this Section in terms of proposal content and sequence of presentation.
- ii. Offerors are instructed to structure their proposals as specified in the following paragraphs to facilitate the evaluation process. Specifically, each segment of the proposal should address completely the related evaluation factor and be outlined so that it completely addresses, in the same sequence, each operations, element or paragraph of the related instructions below.
- iii. The proposal should be organized according to the following general outline. This general outline is provided for organizational purposes only. There will be no scoring below this level.
  - a) Understanding Technical Requirements
    - Technical Approach to Statement of Work
    - Technical Approach to Similar Tasks in the past
  - b) Management Plan and Approach
  - c) Quality Control and Management.

### **iv. Understanding Technical Requirements**

The Offeror shall demonstrate a thorough understanding of the requirements of the RFQ, providing detailed technical approach for each element in the Statement of Work.

This technical response shall consist of the following:

- **Technical Approach to Statement of Work**

The Offeror shall provide the following information for each element in order to demonstrate their understanding of the work and ability to cover and perform all aspects of the Technology Area outlined in the Statement of Work:

- The subtasks/operations for each components of the product shall be detailed in chronological order from raw material to finished component along with the estimated man days or man hours taken for the computation of processing cost.
- Technical approaches for accomplishing the requirements presented, including basis for approaches used.
- Identify key in-house workforce capabilities, as well as a description of workforce to be recruited.
- Unique capabilities and facilities available with the Offeror that would have added advantage.
- Facilities to be set up including the requirement of land and building. Facility realisation schedules for new facilities, and other significant milestones necessary in completely defining the technical approach to be used by the Offeror in achieving the objectives and requirements set forth in the Statement of Work shall be provided.

- **Technical Approach to similar Tasks in the past**

The Offeror shall provide the following information for all similar tasks executed in the past to prove their ability to successfully complete a future task in this area.

- The Offeror shall identify any similar /critical technologies handled in the past and how it was performed.
- Planned Schedule with milestones of deliverables of similar works and comparison with actual schedules.
- Workforce, skill mix, and skill level requirements used to complete similar task/tasks.

#### **a. Management Plan and Approach**

The Offeror shall provide a description of Offeror's methods and techniques for initiating, planning, monitoring and controlling the technical work and schedules for the program. At minimum, the Offeror shall provide the following information:

- Description of the management structure.

- Manpower planned to be deployed in various categories and for various functions. Direct manpower and indirect/partly utilized manpower have to be separately mentioned.
- Organizational chart and narrative, that highlights for the accomplishment of work.
- Explain the management approach for the contract; specifically, the Offeror(s) shall describe the methods and techniques for initiating, planning, monitoring, and controlling the technical work and schedules associated with a task.
- Proposed Department to Contractor interfaces, including how communication between the Departments technical representatives and the Contractor's technical counterparts would be facilitated at both the overall contract and task levels. The Offeror shall define the method or methods for resolving schedule and/or technical issues, and that will provide for appropriate communication.

#### **b. Quality Control and Management**

- Quality management structure
- Planned approach for quality control and management.
- Organization's change control management.

### **19. Preparation of Past Performance**

This provision applies to work performed over the past three years.

- i. The Offeror should submit the information set forth below
  - a) The Offeror should provide a list of all department and/or industry contracts, subcontracts, and projects involving relevant work as described in the RFQ. The Offeror should identify the contract number, the Department agency or industry placing the contract, the type of contract, a brief description of the work, and at least two persons knowledgeable of the work. The contacts must include the Contracting Officer, or, for commercial references, a contracts professional and a technical professional, Include current addresses, and telephone numbers for each contact person.
  - b) For each contract discussed above, list the amount of completion delays, performance problems, and terminations.
  - c) Summarize relevant lessons learned from problems and successes in managing similar efforts. Specifically describe how these experiences would apply to this contract.
- ii. The contractor should provide evidence of previous technical work which demonstrates their knowledge and expertise in the Technology Area with relevant examples.

## **20. Evaluation Factors For Award**

### **Evaluation Factors**

Evaluation will be on the basis of material presented and substantiated in your proposal and not on the basis of what may be implied. Vague statements will be interpreted as a lack of understanding on the part of the offeror and/or inability to demonstrate adequate qualifications. All Offeror(s) should pay particular attention to the instructions.

### **Vendor Selection Criteria**

In selecting the awardee with whom to place orders under competitive orders, the department will consider the following criteria, and award will be made to the Contractor who the Department determines will provide the best value:

1. Meeting the eligibility conditions.
2. Technical understanding of the requirement based on proposal response to the tender.
3. Management Plan and Approach
4. Quality Control and Management
5. Past performance on prior orders
6. Reasonableness of the proposed cost based on comparison to the department estimate or to other contractor's proposed cost.

The Technical factor indicates, for each Offeror, the quality of the work to be performed, the ability of the Offeror to accomplish what is offered, and the services to be provided.

## **21. Price Bid**

The bids should provide the following prices (unit cost and total cost) separately:

- i. Consumables (Consumables shall be procured from VSSC qualified sources only).
  - ii. Processing of all elements, Trimming, dimensional inspection, NDT, assembly, product acceptance tests including quality control and associated specimen processing and acceptance testing of raw materials and Testing of control coupons.
  - iii. Cost of tools other than FIM if anything required, templates, machining fixtures, transportation/assembly ring and any other process tools as applicable.
  - iv. Associated documentation charges such as process documents, quality control plans, product logs, etc for 4 copies each.
  - v. Metallic component machining and assembly cost.
  - vi. A separate developmental cost, if required, can be separately included for fabricating the first set of Dual Launch Adaptor Version -3 / Version-4 (DLA-V3 /DLA-V4).
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